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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/748,277

12/31/2003

Tae-wan Kim

249/409

6602

7590

05/17/2006

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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,277

Applicant(s)

KIM ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-12 and 14-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6-10 and 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification, as originally filed, does not provide support for the limitation "a conductive metal strip that is electrically and thermally connected to the conductive metal tube and is coextensive with the conductive metal tube" as required by claim 6-lines 6-8, claim 16-lines 12-13, claim 21-lines 4-5, and claim 22-lines 4-5. It appears that the conductive metal strip is within the boundaries of the conductive metal tube but does not share the same boundaries as is required by the word "coextensive".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 11-12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., WO 00/00993.

Chen et al. shows the invention as claimed including an inductively coupled antenna 600 for installation on a reaction chamber of an inductively coupled plasma processing apparatus and for connection to a radio frequency power source to induce an electric field for ionizing a reactant gas injected into the reaction chamber and for generating plasma, the inductively coupled antenna comprising a coil having a plurality of turns including an outermost turn and a plurality of inner turns, wherein a current flowing through the outermost turn is larger than a current flowing through the plurality of inner turns as adjusted by the capacitors (see fig. 6 and its description).

Chen et al. is applied as above but does not expressly disclose wherein a sum of the lengths of the plurality of inner turns is longer than a length of the outermost turn. However, a prima facie case of obviousness exists because, where the only difference between the prior art and the claims was a recitation of relative dimensions of the apparatus and an apparatus having the claimed relative dimensions would not perform differently than the prior art apparatus, the claimed apparatus is not patentably distinct from the prior art apparatus. Moreover, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum lengths of the coils based upon a variety of factors including the desired plasma distribution and such limitation would not lend patentability to the instant application absent a showing of unexpected results.

With respect to claims 2 and 12, the outermost turn and the plurality of inner turns are connected to the RF power supply in parallel and the plurality of inner turns are connected to each other in series.

Regarding claims 4 and 14, the plurality of turns are concentrically formed.

Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., WO 00/00993 as applied to claims 1-2, 4, 11-12, and 14 above, and further in view of admitted prior art.

Chen et al. is applied as above but does not expressly disclose wherein the plurality of turns is formed of a single conductive line. Admitted prior art discloses an antenna with a plurality of turns that is formed of a single conductive line (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Chen et al. so as to form the coils from a single conductive line because the admitted prior art shows that it is well known in the art to form a coil comprised of a plurality of turns from a single conductive line.

Response to Arguments

Applicant's arguments filed 3/6/06 have been fully considered but they are not persuasive. Applicant argues that Chen et al. does not render obvious the limitations of newly amended claim 1. However, the examiner respectfully disagrees because a prima facie case of obviousness exists because, where the only difference between the

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prior art and the claims was a recitation of relative dimensions of the apparatus and an apparatus having the claimed relative dimensions would not perform differently than the prior art apparatus, the claimed apparatus is not patentably distinct from the prior art apparatus. Moreover, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum lengths of the coils based upon a variety of factors including the desired plasma distribution and such limitation would not lend patentability to the instant application absent a showing of unexpected results. Additionally, applicant states that Chen et al. discloses having the lengths of the inner and outer coils the same and therefore teaches away from the invention as claimed. However, the invention as claimed merely states that the inner coils have a greater length than only the outermost turn and therefore a statement regarding the outer and inner coils in their totality does not appear to address the claimed invention.

Applicant's arguments with respect to claims 6-10 and 16-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luz L. Alejandro
Primary Examiner
Art Unit 1763

May 13, 2006